FIG. 1

CONVENTIONAL ART

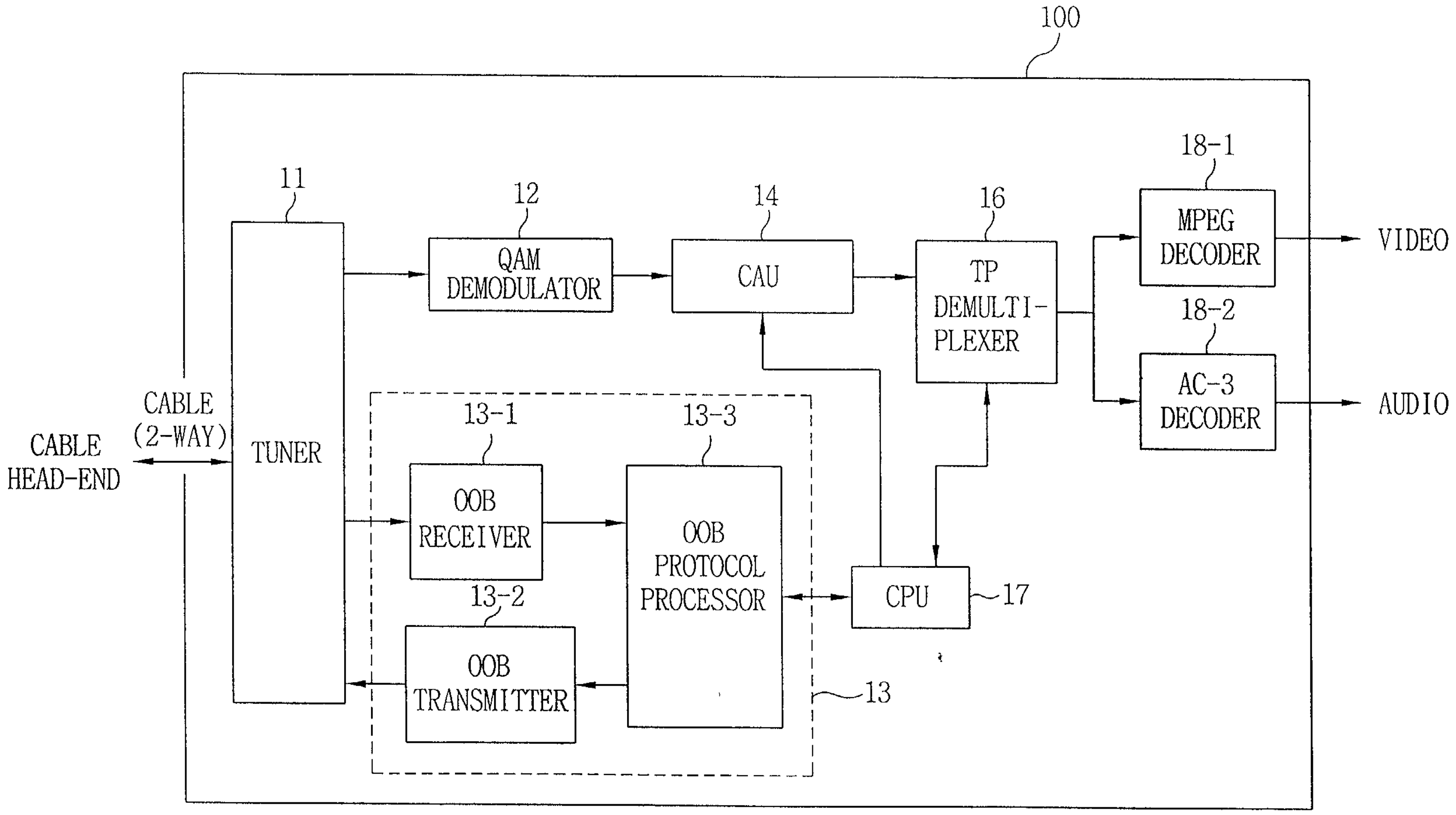


FIG.2

CONVENTIONAL ART

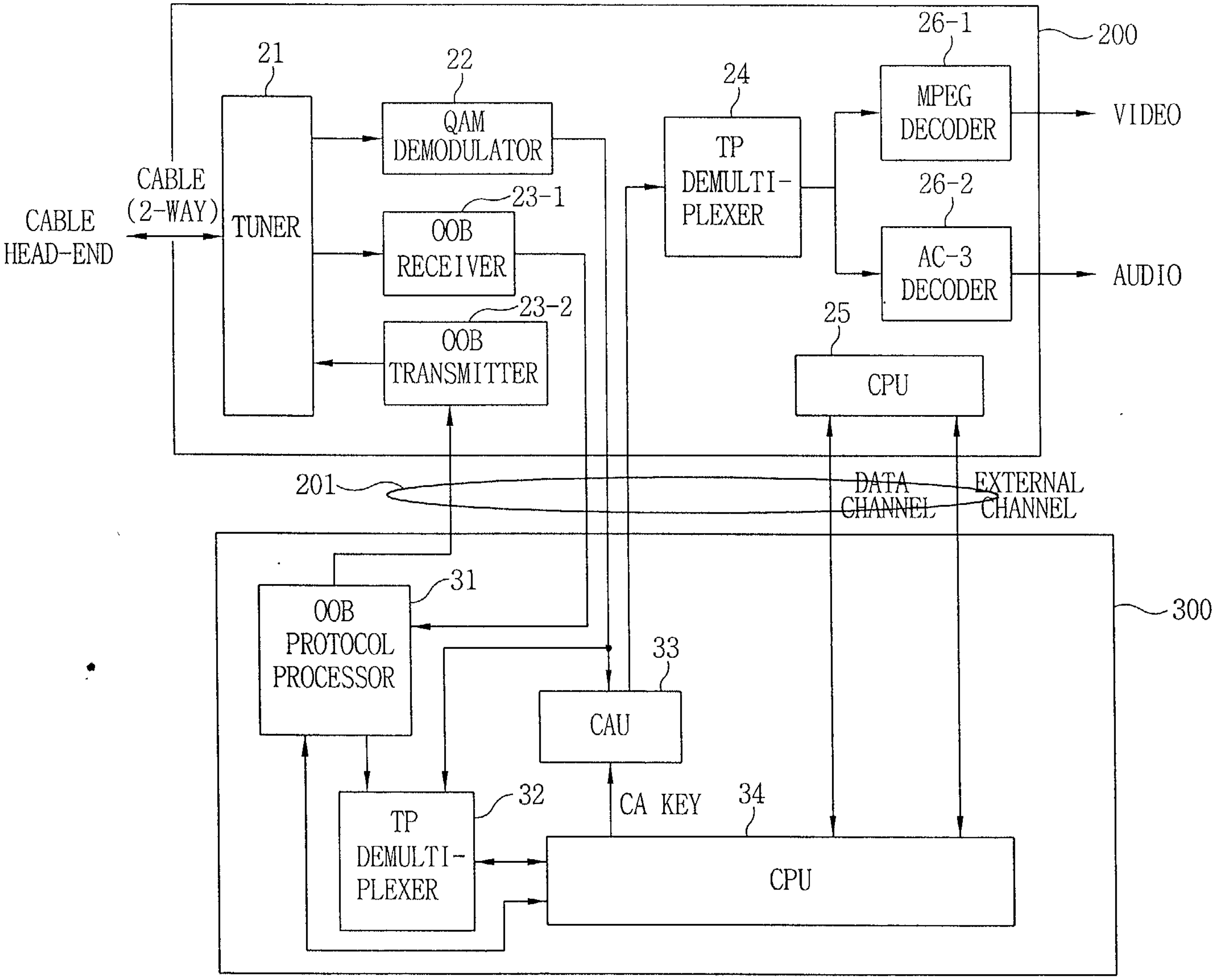


FIG.3

CONVENTIONAL ART

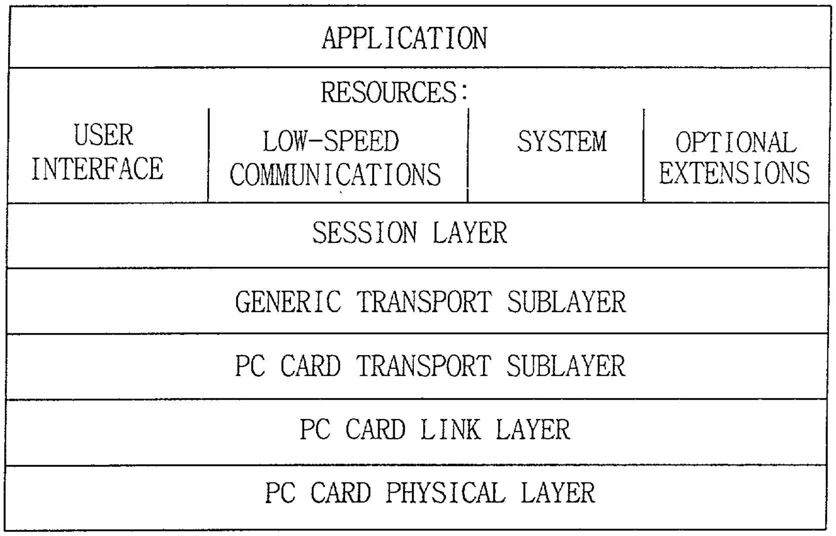
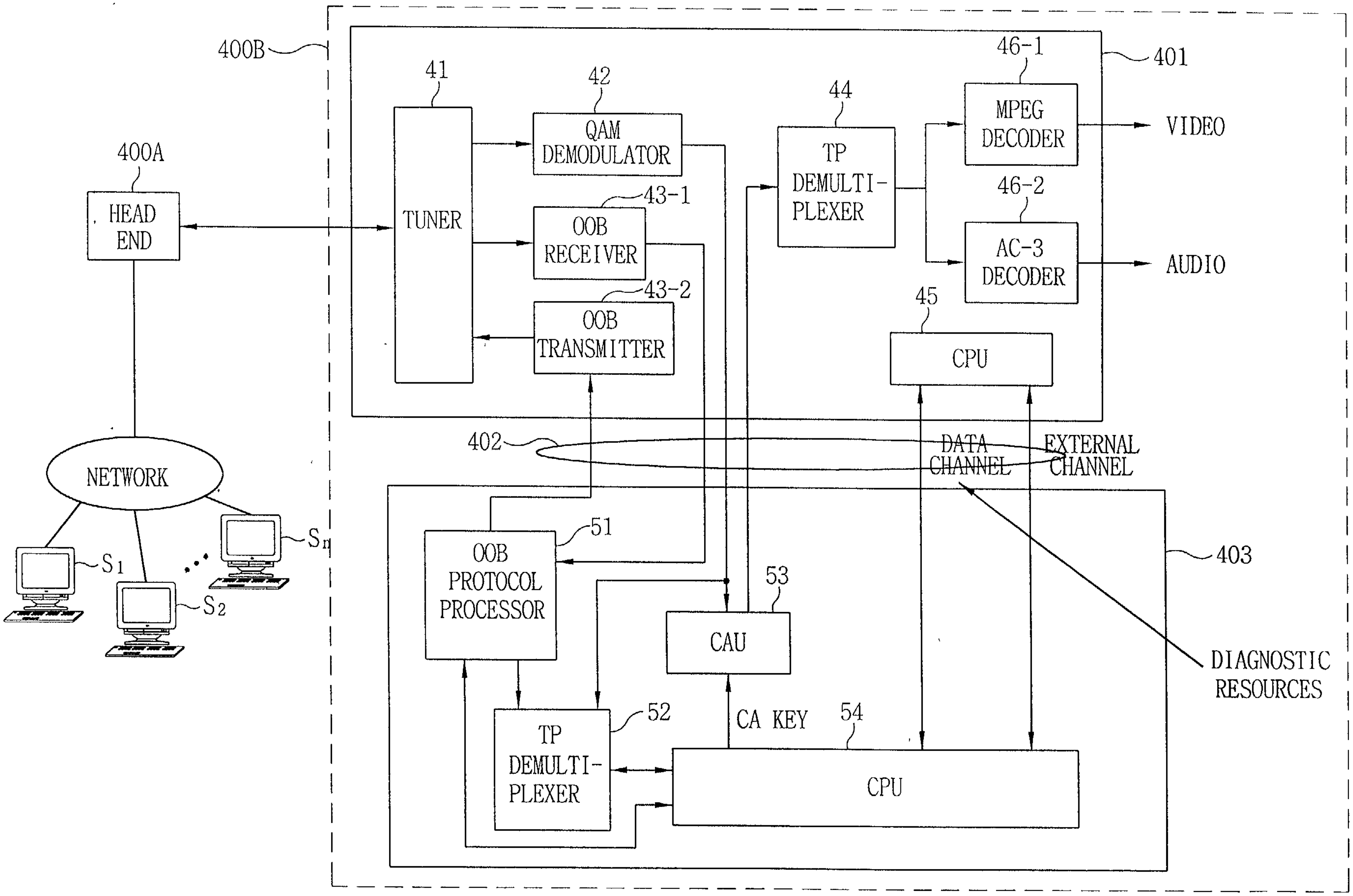


FIG.4



400B
400A
HEAD END
NETWORK
S1
S2
Sn
41
TUNER
42
QAM DEMODULATOR
43-1
OOB RECEIVER
43-2
OOB TRANSMITTER
44
TP DEMULTI-PLEXER
46-1
MPEG DECODER
46-2
AC-3 DECODER
VIDEO
AUDIO
45
CPU
401
402
DATA CHANNEL
EXTERNAL CHANNEL
403
DIAGNOSTIC RESOURCES
51
OOB PROTOCOL PROCESSOR
52
TP DEMULTI-PLEXER
53
CAU
CA KEY
54
CPU

FIG.5

Syntax	NO. OF BITS
Diag_open_req() {	
Diag_open_req_tag	24
Length_field( ) = 0	
}	

FIG.6A

Syntax	NO. OF BITS	DESCRIPTION
Diag_open_cnf( ) {		
Diag_open_cnf_tag	24	
Length_field()		
Send_datatype_number	8	
For(I=0; 1<Send_datatype_number;1++) {		INFORMATION REPLY TO SET-TOP BOX AND MANUFACTURER
Datatype_ID	8	
Datatype_length	8	
For(J=0; J<Datatype_length; J++) {		
Data_byte	8	
}		
}		
Sub_system_number	8	NUMBER OF SUBSYSTEM INCLUDING SET-TOP BOX
For(I=0;Sub_system_number;I++) {		
Sub_sustem_id	8	
}		LIST OF SUBSYSTEM
}		

FIG.6B

Datatype_id	id VALUE	LENGTH (BYTES)
Manufacturer_id	0x01	50(Max)
Brand_id	0x02	50(Max)
Model_id	0x03	20(Max)
Serial_id	0x04	20(Max)
Host_id	0x05	8
POD_module_id	0x06	8

FIG.6C

Sub_system	id VALUE(HEXA)
CableNIM tuning sub_system	0x01
TP demultiplexing sub_system	0x02
Video decoding sub_system	0x03
Audio decoding sub_system	0x04
Graphics sub_system	0x05
Copy protection sub_system	0x06
…	

FIG.7

Syntax	NO. OF BITS
Diag_stat_req() {	
Diag_stat_req_tag	24
Length_field( ) = 0	
}	

FIG.8

Syntax	NO. OF BITS	DESCRIPTION
Diag_stat_cnf() {		
Diag_stat_cnf_tag	24	
Length_field( )		
System_status	8	REPLY WHETHER SET-TOP IS NOMAL OR NOT 0x00: OK 0x01: Not OK
}		

FIG.9

Syntax	NO. OF BITS
Diag_data_req() {	
Diag_data_req_tag	24
Length_field( ) = 0	
}	

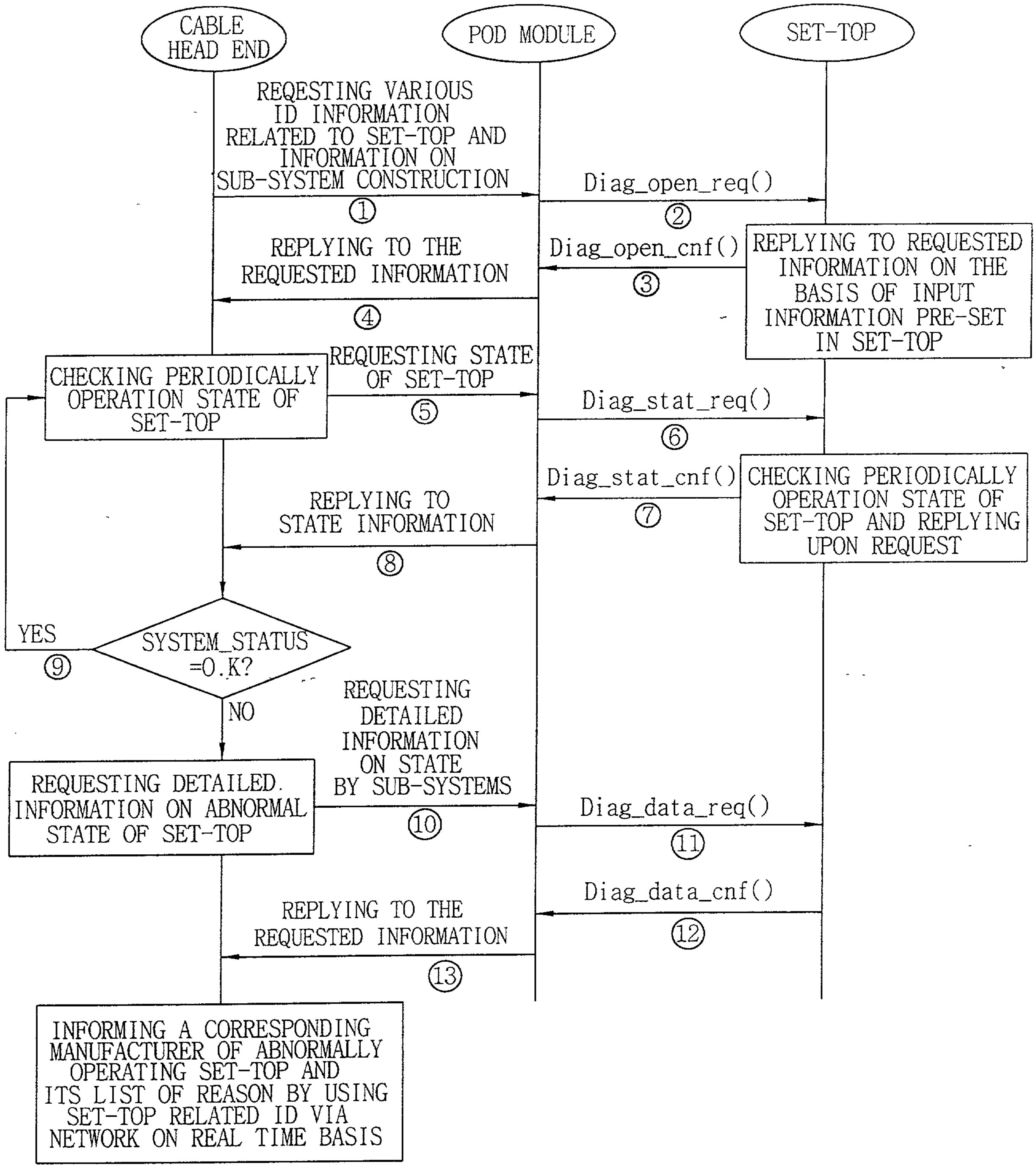
FIG. 10A

Syntax	NO. OF BITS	DESCRIPTION
Diag_data_cnf( ) {		
Diag_data_cnf_tag	24	
Length_field()		
Sub_system_number	8	NUMBER OF SUBSYSTEM
For(I=0; I<Sub_system_number;1++) {		INCLUDING SET-TOP BOX
Sub_system_id	8	
Sub_system_status	8	REPLY WHETHER SET-TOP
}		IS NOMAL OR NOT
}		

FIG. 10B

Sub_system	id VALUE(HEXA)	DESCRIPTION
CableNIM tuning sub_system		
	0x00	OK
	0x01	In-band tuning not working
	0x02	OOB Rx tuning not working
	0x03	OOB Tx tuning not working
TP demultiplexing sub_system	…	…
…	…	

FIG.11



CABLE HEAD END
POD MODULE
SET-TOP
REQESTING VARIOUS ID INFORMATION RELATED TO SET-TOP AND INFORMATION ON SUB-SYSTEM CONSTRUCTION
①
Diag_open_req()
②
REPLYING TO THE REQUESTED INFORMATION
Diag_open_cnf()
③
REPLYING TO REQUESTED INFORMATION ON THE BASIS OF INPUT INFORMATION PRE-SET IN SET-TOP
④
CHECKING PERIODICALLY OPERATION STATE OF SET-TOP
REQUESTING STATE OF SET-TOP
⑤
Diag_stat_req()
⑥
Diag_stat_cnf()
⑦
CHECKING PERIODICALLY OPERATION STATE OF SET-TOP AND REPLYING UPON REQUEST
REPLYING TO STATE INFORMATION
⑧
YES
SYSTEM_STATUS =0.K?
⑨
NO
REQUESTING DETAILED INFORMATION ON STATE BY SUB-SYSTEMS
REQUESTING DETAILED. INFORMATION ON ABNORMAL STATE OF SET-TOP
⑩
Diag_data_req()
⑪
Diag_data_cnf()
⑫
REPLYING TO THE REQUESTED INFORMATION
⑬
INFORMING A CORRESPONDING MANUFACTURER OF ABNORMALLY OPERATING SET-TOP AND ITS LIST OF REASON BY USING SET-TOP RELATED ID VIA NETWORK ON REAL TIME BASIS